

SECTION 15110 - PLUG VALVES

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing plug valves with operators, protective coatings, and lubricating guns.

1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

- 1. Section 15100 Valves, General

1.3 FACTORY TESTING

- A. **Product Testing:** Products shall be tested at the factory for compliance with the indicated requirements and as follows:
 - 1. An independent testing laboratory shall conduct proof-of-design testing on valves [12-inch] [18-inch] [-inch] diameter and greater in accordance with AWWA C 504, Section 5, except that where the word "disc" appears in the standard, it is understood to mean "plug."
- B. **Witnesses:** The OWNER and the CONSTRUCTION MANAGER (at the option of either) reserve the right to witness factory tests.
- C. **Results:** Proof-of-design test results shall be submitted in compliance with Section 15100.

PART 2 -- PRODUCTS

2.1 LUBRICATED PLUG VALVES

- A. **Equipment Requirements:** Lubricated plug valves shall be of the tapered-plug type, worm-gear operated for sizes 4-inch and larger, with flanged ends and lever-operated for sizes 2-1/2-inch and smaller, with threaded ends, except as otherwise indicated. Valve bodies and plugs shall be fabricated of cast iron. Where not otherwise indicated, valve components shall be designed and fabricated to resist corrosion and wear due to friction and shall be recommended by the manufacturer for use in the service indicated.
- B. **Surface Coating:** Surfaces of the plugs shall be coated with a dry film lubricant (polyfluoride or equal) permanently bonded to the surfaces. Ferrous surfaces of valves, 4-inch and larger, in contact with process fluid, shall be epoxy-coated conforming to Section 09800.
- C. **Internal Sealants:** Valves shall include fittings designed to permit application of a sealant through a check valve in the stem, or through a stainless steel tube for worm-gear operated valves. The design shall include ducts or grooves to ensure maintenance of a closed pressurized sealant system between contact surfaces of moving parts. Plugs shall be held toward seats by factory-adjusted

gland assemblies set for proper sealing and operating torque. Gland assemblies shall be adjustable from the valve exteriors utilizing either spring washers or gland deflection to allow plug unseating when pressurized sealant is injected.

- D. **Valve Bodies and Plugs:** Valve bodies and plugs shall have smoothly finished water passages free from sharp corners when plugs are in the wide-open position. Valves for grit slurry service shall have stainless steel balancing springs and shall have a minimum port area of at least 89 percent of the connected piping area in the open position. Worm-gear operators shall be enclosed in watertight and dust-tight grease-packed cases, with position indicators. Valves, of sizes up to and including 24-inch, shall be designed for a minimum water-working pressure of 150 psi and larger valves shall be designed for a minimum water-working pressure of 120 psi except as otherwise indicated.
- E. **Lubricating Guns:** The WORK includes manual lubricating guns for lubricated plug valves in sizes up to 6 inches and for larger valves, pneumatically operated lubricating guns. The guns shall be manufactured by the valve manufacturer and shall be equipped with flexible connectors, pressure gauges, and safety valves, with operating instructions, furnished in labeled tool boxes. Two lubricating guns of each type shall be provided.

2.2 ECCENTRIC PLUG VALVES

- A. **Equipment Requirements:** Eccentric plug valves shall be of the non-lubricated eccentric type with cast iron bodies, resilient faced plugs, or shall include replaceable, resilient seat in the body. Except as otherwise indicated, all valves for sizes 4-inch and larger shall have worm gear operators, nickel or stainless steel seats, and ANSI 125 psi flanged or grooved ends. Valves 2-1/2 inches and smaller shall have operating levers, nickel or stainless steel seats, and threaded ends with resilient facing suitable for the intended service. Submerged and buried valves shall be equipped with worm-gear operators, lubricated and sealed to prevent entry of dirt and water into the operator. Shaft bearings shall be stainless steel furnished with permanently-lubricated bearing surfaces. Operators shall clearly indicate valve position. Valves up to and including 20 inches in size shall have an unobstructed port area of not less than 80 percent of full pipe area, and not less than 70 percent for larger valves. Eccentric plug valves shall have a pressure rating of not less than 150 psi water, oil, or gas (WOG) service and bubble-tight shut-off.
- B. **Surface Coating:** Ferrous surfaces of valves 4 inches and larger in contact with process fluid shall be epoxy-coated conforming to Section 09800.

2.3 MANUFACTURERS

- A. Products of the type or model (if any) indicated shall be manufactured by one of the following (or equal):

1. Lubricated Plug Valves (General Service):

Wm. Powell Company
Nordstrom Valves, Inc.
Serck Audco
Worcester Controls

2. Eccentric Plug Valves:

DeZurik Corporation
Keystone, Drum-Owens, (Homestead)
Victualic Company of America

3. Lubricated Plug Valves (For Grit Slurry Service):

Nordstrom Valves, Inc., (Model 50169)
Serck Audco Valves, (Model MRW 133 GGS)

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. **General:** Valves shall be installed in accordance with Section 15100.
- B. **Eccentric Plug Valves:** Except as otherwise indicated, the installation of eccentric plug valves in sewage, sludge, or other liquid systems containing solids, silt, or fine sand shall comply with the following:
1. Valves shall be installed with the stem in the horizontal position.
 2. In horizontal piping, the plug shall swing upwards when opening to permit flushing out of solids.
 3. The flow direction through the installed valve shall be such that the valve body cannot fill up with incoming solids when the valve is closed.
 4. Valves where closure for extended periods is indicated (stand-by, bypass, or drain lines), and valves where reversed flow is indicated (higher pressure on downstream side forcing the plug away from its seat) shall include worm gear operators for sizes 4 inches and larger.

**** END OF SECTION ****